The Accessory Bile Duct of Luschka and Bile Leakage in Laparoscopic Cholecystectomy

Desmond K.W. Wong MD, BS

Postoperative bile leakage has been reported to occur in 0.2% to 1.5% of patients undergoing laparoscopic cholecystectomy.[1] One of the not-so-common causes is the unrecognized accessory cystic duct of Luschka.[2] We have prepared a case report of bile leakage due to unrecognized accessory bile duct during a laparoscopic cholecystectomy and a recommended technique for recognition and prevention.

Case Report

On April 12, 1993, a 52-year-old man with symptomatic cholelithiasis underwent surgery by using the laparoscopic approach. The gallbladder was dissected off the liver bed in the routine manner using the hook electrocoagulator after the cystic duct was ligated and divided. The cystic duct was small so a cholangiogram was not obtained. It was divided after Endoclips were applied, leaving a very adequate stump between 2 sets of clips. Postoperatively the patient manifested evidence of bile leakage by having recurrent and excessive abdominal pain and toward the fifth postoperative day developed a minimal amount of jaundice. The CT scan showed only a minimal amount of bilateral pleural effusion and a tiny amount of fluid on the liver edge. Subhepatic collection could not be recognized on the CT; the HIDA scan showed evidence of bile leakage. Clinically the patient did not show any signs of sepsis. The ESR was 46 and the WBC ranged between 10,800 and 15,600/c mm during the entire postoperative course. Total bilirubin was 3.5 mg/dl and direct component was 2.1 mg/dl. ERCP was not performed because the equipment was not available. The patient underwent laparotomy and operative cholangiogram through the cannulated accessory bile duct of Luschka which revealed a 1 mm-wide bile duct, 2 mm to 3 mm long, draining a small portion of the right lobe of the liver. The cystic duct stump was easily identifiable at laparotomy and was found to be securely closed by the Endoclips. Definitive treatment consisted of ligation of the duct of Luschka, peritoneal lavage and drainage. Following this, the patient recovered without any further problems.

Department of General Surgery
Hilo Hospital
1190 Waianuenue Avenue
Hilo, Hawaii 96720

Discussion

During laparoscopic cholecystectomy, although the anatomy can be well visualized, the technique of using an electrocoagulator exclusively to dissect the gallbladder off the liver bed prevents identification of the accessory cystic duct because the duct probably is sealed while being transected, and therefore no suggestion of bile leakage is evident. In this case, at laparotomy, the accessory duct of Luschka was determined to be quite short, less than 5 mm in length, and only about 1 mm in diameter. This suggests that dissection of the infundibulum portion of the gallbladder from the liver bed should probably be performed with sharp and blunt dissection using the Endoshears and/or Maryland dissectors. Any tube-like structures should be partially incised sharply with Endoshears to detect whether or not it is an accessory bile duct. If blood vessels are encountered, they can be treated with electrocoagulation. Using this technique may have more problems with hemostasis, however, it would certainly prevent bile leakage from an unrecognized accessory cystic duct. Routine drainage following laparoscopic cholecystectomy has not been performed, nor is it recommended by others. It has been estimated that accessory bile duct of Luschka occurs in 5% to 30% of individuals.[3] This is quite inconsistent with the number of bile leaks, and certainly other surgeons have not routinely identified this anomaly. Routine operative cholangiogram through the cystic duct would probably not show most of these accessory ducts.[4] Endoscopically placed common bile duct stents would probably not be sufficient to close such a bile duct leak. CT-guided drainage is probably effective if a clear-cut collection can be demonstrated.[5] Biliary peritonitis will require laparotomy ligation of the leaking bile duct and peritoneal lavage[6] as was done in this case. One distinguishing feature of bile leakage from the accessory duct of Luschka is that hepatic bile is probably sterile; although biliary peritonitis occurs, it does not cause sepsis.

Conclusion

Bile leakage may occur in laparoscopic cholecystectomy from the unrecognized divided accessory cystic duct of Luschka. In such cases, the patient may not demonstrate sepsis, although an unusual amount of abdominal pain, leukocytosis and low-grade jaundice might be exhibited. Identification of bile leakage is best demonstrated with an HIDA scan,[5] though CT scan may be helpful, and if collection occurs, CT-guided drainage may be

sufficient to correct the problem. Laparotomy and ligation of this divided accessory cystic duct and peritoneal lavage are indicated when no localized collection is demonstrated. Small bilateral pleural effusions are telltale signs and can be easily demonstrated with chest x-ray. In cases of unusual abdominal pain following laparoscopic cholecystectomy, a chest x-ray is helpful for further studies. Early treatment will shorten duration of morbidity. A suggestion to improve the surgical technique dealing with this problem is presented.

Acknowledgements

Appreciation and thanks to:

- James Lambeth MD, who provided the current references in radiology literature and helpful discussions for diagnosis.
- Gerald Lau MD and Steven Woo MD for their constructive suggestions, encouragement and review of the manuscript.
- Sandi Nichols and Emress Matsumoto for their secretarial services and preparation of the manuscript.
- Lorna Nekoba, a Master of Library Science, for the literature search.

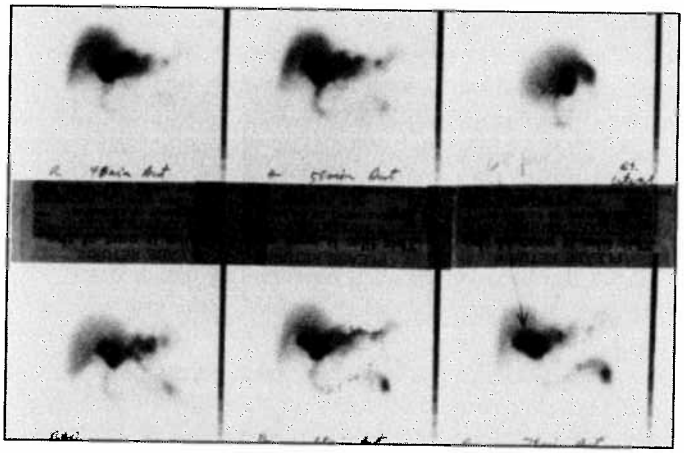

Fig 1.—Postop HIDA scan demonstrating abnormal collection of bile at the former site of the gallbladder.

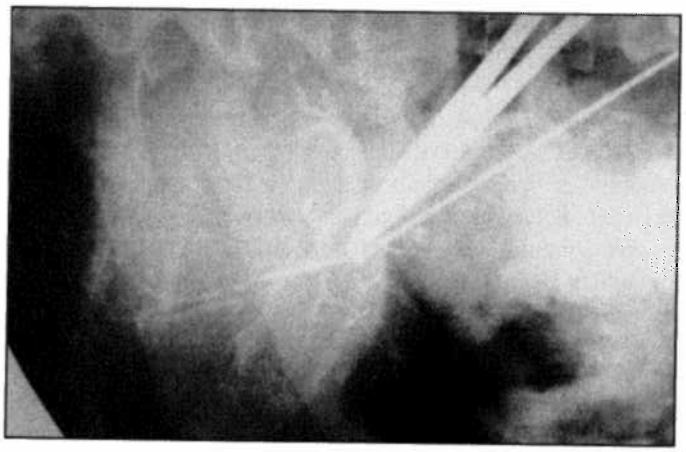

Fig 2.—Cholangiogram through the cannulated accessory bile duct.

References

1. Crist DW, Gadacz TR. Complications of laparoscopic surgery. *Surg Clin North Am.* 1993;73:2.
2. Bryant T. Laparoscopic cannulation of an accessory hepatic duct: A case report. *J Laparoendosc Surg.* 1991;1:4.
3. McQuillan T, Manolas SG, Hayman JA, Kune GA. Surgical significance of the bile duct of luschka. *Br J Surg.* 1989;7:76.
4. Berci G. Biliary ductal anatomy and anomalies. *Surg Clin North Am.* 1992;72:5.
5. Rosenberg DJ, Brugge WR, Alavi A. Bile leak following an elective laparoscopic cholecystectomy: the role of hepatobiliary imaging in the diagnosis and management of bile leaks. *J Nucl Med.* 1991;32:1777-1781.
6. Wright TB, Betino RB, Bishop AF, Brady TM, Castaneda F, Berkman WA, Finnigan MF. Complications of laparoscopic cholecystectomy and their interventional radiologic management. *Radiographics.* 1993;13:119-128.